



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/800,195	03/12/2004	Junyan Dai	5347.218	8744

20792 7590 10/31/2006

MYERS BIGEL SIBLEY & SAJOVEC
PO BOX 37428
RALEIGH, NC 27627

EXAMINER

LEE, SIN J

ART UNIT	PAPER NUMBER
----------	--------------

1752

DATE MAILED: 10/31/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

5

Office Action Summary	Application No.	Applicant(s)	
	10/800,195	DAI ET AL.	
	Examiner	Art Unit	
	Sin J. Lee	1752	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 August 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 12,13,19-21,26,32-35,45,48 and 52 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 12,13,19 and 32-35 is/are allowed.
- 6) ☒ Claim(s) 20,21,26,45,48 and 52 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. In view of the amendment of August 24, 2006, previous objection to specification, previous objection on claim 19, previous 102(b) rejection on claim 45 over Kotani et al'649, previous 103(a) rejection on claim 48 over Riter'092 and previous 103(a) rejection on claims 26 and 48 over Chung et al'800 are hereby withdrawn.
2. Due to newly cited prior arts, the following rejections are made non-final with the Examiner's deepest apology.
3. It is to be noted that the effective filing date of present claims 20, 21 and 48 is March 12, 2004 since those claims are not supported in the provisional application 60/454,062 file on March 12, 2003; Present claims 20 and 21 are not supported at all. Present claim 48 is supported in the provisional application only for the case of those two polymers, poly(styrene-b-isoprene) and hydroxylated poly(styrene-b-isoprene).

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

5. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
6. Claims 20, 21 and 48 are rejected under 35 U.S.C. 102(a) as being anticipated by Dai et al ("Synthesis and Evaluation of Novel Organoelement Resists for EUV Lithography", Proceedings of SPIE, vol.5039 (2003), pg.1164-1172).

As discussed above, the effective filing date of present claims 20, 21 and 48 is March 12, 2004. On pg.1166, Dai teaches present inventions of claims 20 and 21. On pg.1170, Dai teaches present invention of claim 48 (in which the polymer is present hydroxylated poly(styrene-b-isoprene)). Instant rejection can be overcome by canceling present claims 20 and 21 and by deleting all of those polymers in claim 48 except for "poly(styrene-b-isoprene)" and "hydroxylated poly(styrene-b-isoprene)" (by doing so, the effective filing date of claim 48 becomes March 12, 2003, and thus, the reference, Dai et al, which is dated June 2003, cannot be a prior art anymore).

7. Claims 45, 48 and 52 are rejected under 35 U.S.C. 102(b) as being anticipated by Chung et al ("Metallocene-Mediated Olefin Polymerization with B-H Chain Transfer Agents: Synthesis of Chain-End Functionalized Polyolefins and Diblock Copolymers" *Macromolecules*, vol.34 (2001), pg.8040-8050).

Chung teaches (see abstract, Scheme 1, Figure 1, Chart 2, and Figure 5) *dimesitylborane*-terminated polyolefin (which is formed by hydroboration of polyolefin by using *dimesitylborane*). Therefore, Chung teaches present inventions of claims 45, 48 and 52 (Chung's polyolefin teaches present vinyl compound of claim 48).

8. Claim 48 rejected under 35 U.S.C. 102(b) as being anticipated by Dai et al ("Organoelement Resists for EUV Lithography", *Proceedings of SPIE*, vol.4690 (2002), pg.1193-1202).

Figure 5 of Dai teaches present invention of claim 48 (present polymer being poly(styrene-b-isoprene) and hydroxylated poly(styrene-b-isoprene)). Instant rejection can be overcome by deleting all the polymers of claim 48 except for poly(styrene-b-isoprene) and hydroxylated poly(styrene-b-isoprene) (by doing so, effective filing date of

claim 48 becomes March 12, 2003, in which case Dai et al (which has the same inventive entity and is dated July 2002) cannot be a prior art anymore).

Claim Rejections - 35 USC § 103

9. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

10. Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over Reed, Jr. (3,816,380).

Reed teaches copolymers of dienes (such as isoprene) and polymerizable (co)monomers which examples include vinylcarborane (see col.1, lines 39-52), and Reed furthermore teaches (see col.2, lines 3-5) that boron contents of the copolymers may be varied from 0-30 wt.%. Since the boron content range of 0-30 wt.% overlaps with present range of less than 1 wt.%, the prior art's range would have made present range prima facie obvious. In the case "where the [claimed] ranges overlap or lie inside ranges disclosed by the prior art," a prima facie case of obviousness would exist which may be overcome by a showing of unexpected results, In re Wertheim, 541 F.2d 257, 191 USPQ 90 (CCPA 1976). The copolymers made from dienes and vinylcarboranes would clearly contain a carborane moiety. Therefore, Reed's teaching renders present invention of claim 26 obvious (Reed teaches that the copolymers is capable of undergoing a *cure* reaction (when used in a propellant composition) to form a rubber-like binder material (see col.1, lines 31-36), and it is the Examiner's position that Reed's composition containing such copolymers would inherently be capable of being used as a resist composition). *Instant rejection can be overcome by deleting "carborane" from claim 26.*

Allowable Subject Matter

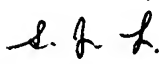
11. Claims 12, 13 and 19 are allowed. The polymer shown in Figure 2 of Gabor et al ("Hydrosiloxane Modified Styrene-Diene Block Copolymer Resists", Proceedings of SPIE, vol.1925 (1993), pg.499-506) does not teach or suggest any of the present polymers of claims 12, 13 and 19.

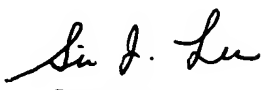
12. Present claims 32-35 are allowed for the reasons previously indicated.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sin J. Lee whose telephone number is 571-272-1333. The examiner can normally be reached on Monday-Friday from 9:00 am EST to 5:30 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cynthia Kelly, can be reached on 571-272-1526. The fax phone number for the organization where this application or proceeding is assigned is **571-273-8300**.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


S. Lee
October 27, 2006


SIN LEE
PRIMARY EXAMINER